Claims:

What is claimed, is:

1. A method comprising optimizing a data path and forwarding data from a start node to an end node over a network,

wherein the network comprises first nodes, each first node being capable to perform one or more first node functions,

wherein one or more of said first node functions are to be applied on said data while forwarding said data through the network,

wherein a number of data path options through the first nodes are determined, for each data path option, the first nodes, having one or more assigned first node functions,

wherein a first capacity value for each of said first nodes and for each of said first node functions and/or combinations of said first node functions are provided; and

wherein the data is forwarded through the data path which is determined by the data path option having a minimum overall capacity regarding the first capacity values;

characterized in that said one or more of said first nodes comprises one or more second nodes each of the second nodes assigned to one of the first nodes is capable to perform one or more second node functions, wherein said first node functions of the first nodes are provided by said second node functions,

wherein providing one of said first capacity values for one specific first node and for one specific first node function and/or one specific combination of said first node functions, including the following steps:

- determining a number of second data path options for the second nodes of the one specific first node to perform said one specific first node function, for each second data path option, the second nodes having one or more assigned second node functions,

- providing second capacity values for each of said second nodes and for each of said assigned second node functions;
- determining the overall capacity values of said second data path options with regard to the second capacity values;
- determining the minimum overall capacity value of any of said second data path options; and
- providing the minimum overall capacity value as the first capacity value.

2. A method according to claim 1, wherein the first node is included in a first network layer and/or the second node is included in a second network layer.

3. A method according to claim 1, wherein the second nodes are physical nodes wherein the second capacity values depending on a data processing speed, a data handling speed and/or a buffering capacity related to the assigned second node functions.

4. A router device for determining a data path from a start node to an end node over a network,
wherein the network comprises first nodes each capable to perform one or more first node functions,
wherein one or more of said first node functions are to be applied on said data while forwarding said data through the network, said one or more of said first nodes comprise one or more second nodes each of the second nodes assigned to one of the first nodes is capable to perform one or more second node functions, wherein said first node functions of the first nodes are provided by said one or more second node functions, the router comprising:

- a first data path determining means to determine a number of data path options through the first nodes for each data path option, the first nodes having one or

more assigned first node functions,

- a first means for determining the minimum overall capacity value of any of said first data path options regarding first capacity values for each of said first nodes and for each of said first node functions and/or combinations of said first node functions;

- receiving means for receiving said first capacity values for each of said first nodes and for each of said first node functions and/or combinations of said first node functions.

5. A router device according to claim 4 further comprising a request transmitting means for sending a request for first capacity values for each of said first nodes and for each of said first node functions and/or combinations of said first node functions to each of said first nodes.

6. A network node comprising:

- at least one subnode, each subnode being able to execute at least one function, wherein a subnode capacity value is assigned to each subnode and to each function related to the respective subnode,

- a request receiving means to receive a request for providing overall capacity values related to a set of at least one specific function able to be executed by the network node,

- a data path determining means to determine a number of data path options for each of the functions of the set of at least one specific function to be executed by the network node,

- capacity determining means to determine an overall capacity value for each of the data path options and for each of the functions of said set of at least one specific function to be performed in the network node, wherein said overall capacity values of each data path option are determined with regard to said subnode capacity values provided for each of said subnodes and for each of said assigned specific functions;

and

- transmitting means for transmitting a minimum overall capacity value for each of the specific functions of the set of one or more specific functions and for the assigned data path option as the requested overall capacity value.

7. An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing data path optimization and data forwarding, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1.

8. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for optimizing a data path and forwarding data, said method steps comprising the steps of claim 1.

9. An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing data path optimization and data forwarding the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 2.

10. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for optimizing a data path and forwarding data, said method steps comprising the steps of claim 2.

11. An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing data path optimization and data forwarding the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a

computer to effect the steps of claim 3.

12. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for optimizing a data path and forwarding data, said method steps comprising the steps of claim 3.

13. A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing router functions, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 5.

14. An apparatus comprising means for optimizing a data path and means for forwarding data from a start node to an end node over a network,

wherein the network comprises first nodes, each first node being capable to perform one or more first node functions,

wherein one or more of said first node functions are to be applied on said data while forwarding said data through the network,

wherein a number of data path options through the first nodes are determined, for each data path option, the first nodes, having one or more assigned first node functions,

wherein a first capacity value for each of said first nodes and for each of said first node functions and/or combinations of said first node functions are provided; and

wherein the data is forwarded through the data path which is determined by the data path option having a minimum overall capacity regarding the first capacity values;

characterized in that said one or more of said first nodes comprises one or more second nodes each of the second nodes assigned to one of the first nodes is

capable to perform one or more second node functions, wherein said first node functions of the first nodes are provided by said second node functions,

wherein providing one of said first capacity values for one specific first node and for one specific first node function and/or one specific combination of said first node functions, comprising:

- means for determining a number of second data path options for the second nodes of the one specific first node to perform said one specific first node function, for each second data path option, the second nodes having one or more assigned second node functions,
- means for providing second capacity values for each of said second nodes and for each of said assigned second node functions;
- means for determining the overall capacity values of said second data path options with regard to the second capacity values;
- means for determining the minimum overall capacity value of any of said second data path options; and
- means for providing the minimum overall capacity value as the first capacity value.

15. A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing data path optimization and data forwarding, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 14.